

## **REMARKS**

Reconsideration of the application in light of the following remarks is respectfully requested.

### **Status of the Claims**

Claims 1-7 and 9-12 are pending. Claim 8 was previously canceled without prejudice or disclaimer of the subject matter contained therein.

### **Rejections under 35 U.S.C. § 103**

Claims 1 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,140,966 to Pankinaho in view of U.S. Patent No. 5,970,393 to Khorrami et al. ("Khorrami"). Claims 2 and 3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pankinaho in view of Khorrami, and in further view of U.S. Patent No. 6,927,732 to Mähringer. Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Pankinaho and Khorrami in view of Mähringer, and in further view of U.S. Patent No. 5,361,077 to Weber. Claims 5-6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Pankinaho in view of Khorrami in view of U.S. Patent No. 5,410,749 to Siwiak et al. ("Siwiak") and in further view of U.S. Published Application No. 2003/0020658 to Apostolos. Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Pankinaho in view of Khorrami, and in further view of Siwiak. Claim 9 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Pankinaho and Khorrami in view of U.S. Patent No. 6,22,437 to Beard. Claim 11 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Pankinaho in view of Mähringer. Claim 12 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Pankinaho and Khorrami in view of Weber, and in further view of Siwiak. Applicant respectfully traverses these rejections.

In the Office Action, the Examiner contends that Pankinaho discloses most of the features of independent claim 1, except for a piezoelectric element attached to the planar antenna, and that the second function is periodic movement of the planar element. The Examiner relies on Khorrami as disclosing this missing structure.

Applicant submits that Khorrami discloses a system that utilizes a number of microstrip antenna s embedded in, or mounted on, a structure — a so-called “smart structure.” Khorrami, Abstract. Khorrami discloses a smart structure 16, with smart patches 12 and feedback controllers 15. Khorrami, column 4, line 66 through column 5, line 15; Fig. 2. Small patches with piezoelectric layer and antenna are fastened on a surface of the device. Khorrami discloses that to change the device’s shape (Fig. 10), the antenna receives a modulated RF-signal. A diode in each patch detects the low frequency baseband signal, which then bends the piezoelectric layer. Khorrami, column 8, lines 11-44; Fig. 10.

Khorrami also discloses a wireless communication system 401 for sensing characteristics of the smart structure 16. An oscillating radio signal resonant with the antenna 406 on the smart structure is modulated with a low frequency alternating voltage generated by the mechanical resonance of the smart structure’s 16 piezoelectric layer. The antenna 406 radiates this modulated carrier out to the surrounding space, where it is received by the original transmitting apparatus 14. The low-frequency part of the mixed signal contains the sensing information, which is then amplified by the amplifier 418 and processed by the processor 420 for display and evaluation. Khorrami, column 6, line 63 through column 7, line 44; Fig. 9.

Applicants respectfully submit that the June 27, 2008 Office Action is conflating Khorrami’s antenna 411 with the smart structure 16 which is being sensed and/or actuated. On pages 4 and 5, the Office Action cites passages from Khorrami and then states that these passages read on “the second function being periodic movement of said planar element, for which the structure comprises a piezoelectric element attached to said planar element,” as recited in claim 1. However, the Office Action does not take into account that claim 1 recites that the “planar element belong[s] to a radiating plane of an antenna in the radio telephone.” On the contrary, Khorrami

discloses that the radiator of the antenna has no other function such as radiating and receiving a radiation. Accordingly, Khorrami does not disclose a “second function” in the form of periodic movement.

Further, Khorrami does not disclose “wherein the periodic movement occurs in a substantial portion of the planar element beyond the location of the piezoelectric element,” as recited in claim 1. Khorrami does not disclose a planar element where the radiator extends beyond the piezoelectric element. Rather, the Office Action somehow equates the smart structure 16 with the “planar element belonging to a radiating plane of an antenna in the radio telephone,” as recited in claim 1.

Applicant submits that for the aforementioned reasons, the combination of Pankinaho and Khorrami does not render claim 1, or its dependent claims obvious. Further, the combination of Pankinaho and Khorrami would result in a plurality of minuscule radiators each having a piezoelectric element and diode fastened to the radiator of an antenna, wherein RF-energy would be carried to those minuscule radiators so as to actuate movement in a part of the radiator. Clearly, this is not the invention recited in claim 1. §

Applicant submits that the other art relied on by the Examiner in combination with Pankhino and Khorrami does not correct the deficiencies of that combination. Accordingly, all claims depending from claim 1 are patentable at least for the reasons discussed above.

Applicant submits that neither Pankinaho nor Mähringer suggest that “the piezoelectric element induces the periodic movement of a substantial portion of the planar element beyond the location of the piezoelectric element” as recited in independent claim 11. In contrast, Figures 3A-3B, 7 and 9-10 of Khorrami show that the footprint of the planar element of the antenna is entirely within or equal to the footprint of the piezoelectric elements. Therefore, it is impossible to have “periodic movement [occurring] in a substantial portion of the planar element beyond the location of the piezoelectric element” as recited in claim 1 (emphasis added). Further, Mähringer discloses a piezo-ceramic layer 4 attached to a shaped membrane 2, and a shaped membrane crease 3 which

encompasses the shaped membrane. (Mähringer, column 1, lines 50-54; Fig. 2.) Because of the shaped membrane crease 3, the piezo-ceramic layer in Mähringer can induce vibrations in only that portion of the radiating plane encompassed within the shaped membrane crease. This would be understood by a person of ordinary skill in the art because the crease mechanically isolates the remainder of the radiating plane. Figures 4 and 5 of Mähringer clearly show that the vibrations occur only within the shaped membrane crease. Present independent claim 11 recites that “the piezoelectric element induces the periodic movement of a **substantial portion of the planar element beyond the location of the piezoelectric element**” (emphasis added). Thus, the Examiner has failed to meet the burden of establishing a prima facie case of obviousness over claim 11.

Independent claim 12 is patentable for at least the same reasons as discussed above regarding the deficiencies of Pankinaho and Khorrami in combination. Further, claim 12 also recites “wherein the periodic movement occurs in a substantial portion of the planar element beyond the location of the first piezoelectric element and beyond the location of the second piezoelectric element.” Applicant submits that Weber fails to correct this deficiency of Pankinaho and Khorrami.

For the reasons stated above, Applicant respectfully requests the reconsideration and withdrawal of these rejections.

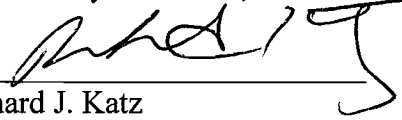
**CONCLUSION**

Each and every point raised in the Office Action dated June 27, 2008 has been addressed on the basis of the above amendments and remarks. In view of the foregoing it is believed that claims 1-7 and 9-12 are in condition for allowance and it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

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Respectfully submitted,

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